

WE CLAIM:

1. A method of managing image data acquired with a first diagnostic medical imaging system, said first diagnostic medical imaging system comprising a display, said image data comprising a first arrangement, said method comprising:
 - displaying said image data on said display, said displayed image data having a second arrangement based on said first arrangement;
 - receiving a sequence of inputs, said sequence of inputs operative to manipulate said displayed image data from said second arrangement to a third arrangement, without substantially altering said first arrangement; and
 - recording said sequence of inputs, said recorded sequence of inputs being capable of being automatically applied to said displayed image data having said second arrangement to realize said third arrangement without substantially altering said first arrangement.
2. The method of Claim 1, further comprising:
 - storing said recorded sequence of inputs separate from said image data.
3. The method of Claim 1, further comprising:
 - redisplaying said image data, said redisplayed image data having said second arrangement;
 - receiving direction from a user to replay said recorded sequence of inputs; and
 - replaying, in response to said direction, said recorded sequence of inputs without further input from said user to manipulate said redisplayed image data from said second arrangement to said third arrangement, without substantially altering said first arrangement.
4. The method of Claim 3, further comprising:
 - communicating said recorded sequence of inputs from said first diagnostic medical imaging system to a second diagnostic medical imaging system located

remote from said first diagnostic medical imaging system, said redisplaying, receiving and replaying occurring on said second diagnostic medical imaging system.

5. The method of Claim 4, wherein said replaying further comprises:
 - determining at least one difference between said first diagnostic medical imaging system and said second diagnostic medical imaging system; and
 - reporting to said user if at least one input of said recorded sequence of inputs depends upon said difference.
6. The method of Claim 4, wherein said replaying further comprises:
 - adjusting at least one input of said recorded sequence of inputs to compensate for differences between said first diagnostic medical imaging system and said second diagnostic medical imaging system.
7. The method of Claim 1, further comprising:
 - allowing said recorded sequence of inputs to be altered; and
 - re-manipulating said displayed image to a fourth arrangement based on said altered recorded sequence of inputs, without substantially altering said first arrangement.
8. The method of Claim 7, wherein said re-manipulating further comprises:
 - reverting said displayed image back to said second arrangement; and
 - replaying said altered recorded sequence of inputs to manipulate said displayed image from said second arrangement to said fourth arrangement.
9. The method of Claim 7, wherein said allowing further comprises allowing a user to one of add an input to said recorded sequence of inputs, remove an input from said recorded sequence of inputs and modify an input of said recorded sequence of inputs.
10. The method of Claim 1, wherein said image data comprises a three dimensional volume.

11. The method of Claim 10, wherein said image data comprises a sequence of three dimensional volumes, each three dimensional volume of said sequence of three dimensional volumes having been incrementally acquired over a period of time.
12. The method of Claim 1, wherein said first diagnostic medical imaging system comprises a diagnostic medical ultrasound system.
13. The method of Claim 12, wherein said sequence of inputs comprises at least one input received from a user via a user interface coupled with said first diagnostic medical imaging system.
14. The method of Claim 1, wherein said first and second arrangements each comprise at least one of composition, position, organization, annotation, augmentation, transformation, and rotation of said displayed image data.
15. The method of Claim 1, wherein said first diagnostic medical imaging system comprises a plurality of display parameters, each of said display parameters comprising a value, wherein said second arrangement is further based on said value of each of said display parameters, at least one said sequence of inputs being operative to alter said value of at least one display parameter to realize said third arrangement, said recording further comprising recording at least said altered value, wherein said recorded altered value is capable of being applied, in conjunction with said recorded sequence of inputs, to said displayed image data having said second arrangement to realize said third arrangement without substantially altering said first arrangement.
16. The method of Claim 1, wherein said recording further includes automatically recording said sequence of inputs prior to loss of function of said first diagnostic medical imaging system, said method further comprising applying said recorded sequence of inputs upon restoration of said function of said first diagnostic medical imaging system.

17. The method of Claim 1, wherein said recording further comprises recording an identification of said image data with said sequence of inputs.
18. A method of managing image data acquired with a first diagnostic medical imaging system, said first diagnostic medical imaging system comprising a display and a plurality of display parameters, each of said display parameters further comprising a value, said value of each of said plurality of display parameters operative to control an arrangement of said image data as displayed on said display, said method comprising:
 - displaying said image data on said display, said displayed image data comprising a sequence of three dimensional volumes, each three dimensional volume of said sequence of three dimensional volumes having been incrementally acquired over a period of time, said displayed image data further having a first arrangement displayed on said display based on said image data and at least one of said values of said plurality of display parameters;
 - receiving input operative to alter said value of at least one of said plurality of display parameters, whereby said displayed image is manipulated from said first arrangement displayed on said display to a second arrangement displayed on said display based on said altered value, without substantially altering said image data; and
 - recording at least said altered value, wherein said recorded altered value is capable of being automatically applied to said displayed image data having said first arrangement to realize said second arrangement on said display without substantially altering said image data.
19. The method of Claim 18, further comprising:
 - storing said recorded altered value separate from said image data.
20. The method of Claim 18, further comprising:
 - loading said image data, said loaded image data having said first arrangement;
 - receiving direction from a user to apply said recorded altered value; and

applying, in response to said direction, said recorded altered value without further input from said user to manipulate said loaded image data from said first arrangement to said second arrangement displayed on said display, without substantially altering said image data.

21. The method of Claim 20, further comprising:
 - communicating said recorded altered value from said first diagnostic medical imaging system to a second diagnostic medical imaging system located remote from said first diagnostic medical imaging system, said loading, receiving and applying occurring on said second diagnostic medical imaging system.
22. The method of Claim 21, wherein said applying further comprises:
 - determining at least one difference between said first diagnostic medical imaging system and said second diagnostic medical imaging system; and
 - reporting to said user if at least one altered value of said recorded altered value depends upon said difference.
23. The method of Claim 21, wherein said applying further comprises:
 - adjusting at least one of said recorded altered value to compensate for differences between said first diagnostic medical imaging system and said second diagnostic medical imaging system.
24. The method of Claim 18, further comprising:
 - allowing said recorded altered value to be modified; and
 - re-manipulating said displayed image to a third arrangement based on said modified recorded altered value, without substantially altering said image data.
25. The method of Claim 24, wherein said re-manipulating further comprises:
 - reverting said displayed image back to said first arrangement; and
 - re-applying said modified recorded altered value to manipulate said displayed image from said first arrangement to said third arrangement.

26. The method of Claim 24, wherein said allowing further comprises allowing a user to one of add to said recorded altered value, remove from said recorded altered value and modify said recorded altered value.
27. The method of Claim 18, wherein said first diagnostic medical imaging system comprises a diagnostic medical ultrasound system.
28. The method of Claim 18, wherein said first diagnostic medical imaging system comprises a review workstation.
29. The method of Claim 18, wherein said first and second arrangements each comprise at least one of composition, position, organization, annotation, augmentation, transformation, and rotation of said displayed image data.
30. The method of Claim 18, wherein said receiving further comprises receiving a sequence of inputs from a user via a user interface coupled with said first diagnostic medical imaging system, whereby said displayed image is further manipulated from said first arrangement to said second arrangement based on said sequence of inputs, said recording further comprising recording said sequence of inputs, wherein said recorded sequence of inputs is capable of being automatically applied to said displayed image data having said first arrangement in conjunction with said recorded altered value to realize said second arrangement.
31. The method of Claim 18, wherein said recording further comprises recording an identification of said image data with said at least said altered value.
32. In a first diagnostic medical imaging system having a first display for displaying image data controllable by a first plurality of display parameters, said image data comprising a sequence of three dimensional volumes, each of said three dimensional volumes having been incrementally acquired over a period of time, a method of managing said image data, said method comprising:
 - allowing a user to manipulate at least one of said first plurality of display parameters to define a viewing configuration of a portion of said image data on

said first display without substantially altering said image data; and
storing said user definition independent of said image data, without substantially altering said image data, whereby said stored user definition is capable of being retrieved to recreate said viewing configuration of said image data.

33. The method of Claim 32, wherein said allowing further comprises receiving a sequence of inputs, said sequence of inputs operative to manipulate said first plurality of display parameters, said user definition comprising said sequence of inputs.
34. The method of Claim 32, wherein said user definition comprises at least said manipulated at least one of said first plurality of display parameters.
35. The method of claim 32, wherein said stored user definition is capable of being communicated to a second diagnostic medical imaging system, said second diagnostic medical imaging system having a second display controllable by a second plurality of display parameters, said communicated stored user definition being operative to manipulate at least one of said second plurality of display parameters to recreate said viewing configuration of said image data on said second display.
36. The method of claim 32, wherein said storing further includes automatically storing said user definition prior to loss of function of said first diagnostic medical imaging system, said method further comprising restoring said user definition to recreate said viewing configuration of said image data upon restoration of said function of said first diagnostic medical imaging system.
37. The method of Claim 32, wherein said storing further includes storing identification of said image data with said user definition.
38. An apparatus for managing image data acquired with a first diagnostic medical imaging system, said first diagnostic medical imaging system comprising a first

display, said image data comprising a first arrangement, said apparatus comprising:

first display logic coupled with said first display and operative to display said image data on said first display having a second arrangement as a function of said first arrangement;

first input logic coupled with said first display logic and operative to receive a sequence of inputs, said sequence of inputs operative to cause said first display logic to manipulate said displayed image data from said second arrangement to a third arrangement displayed on said first display without substantially altering said first arrangement; and

first store logic coupled with said first display logic and said first input logic and operative to store said received sequence of inputs in a first memory coupled with said first store logic, said stored sequence of inputs capable of being retrieved from said first memory and automatically applied to said first display logic to cause said first display logic to manipulate said displayed image data having said second arrangement to realize said third arrangement displayed on said first display without substantially altering said first arrangement.

39. The apparatus of Claim 38, wherein:

said first display logic is further operative to redisplay said image data, said redisplayed image data having said second arrangement;

said first input logic is further operative to receive direction from a user to replay said stored sequence of inputs; and

said first store logic is further operative to retrieve said stored sequence of inputs from said first memory and apply said stored sequence of inputs to said first display logic to cause said first display logic to manipulate said displayed image data having said second arrangement to realize said third arrangement on said first display without substantially altering said first arrangement.

40. The apparatus of Claim 38, wherein said apparatus further comprises:

first communication logic coupled with said first store logic and operative

to transmit said stored sequence of inputs to a second diagnostic medical imaging system via a network coupled between said first and second diagnostic medical imaging systems, said second diagnostic medical imaging system comprising a second display, second display logic with said second display, second input logic coupled with said second display logic, second store logic coupled with said second display logic and said second input logic, and second communications logic coupled with said second store logic, said second communications logic operative to receive said transmitted stored sequence of inputs and store said transmitted stored sequence of inputs in a second memory coupled with said second store logic, and wherein:

said second display logic is further operative to redisplay said image data, said redisplayed image data having said second arrangement;

said second input logic is further operative to receive direction from a user to replay said transmitted stored sequence of inputs; and

said second store logic is further operative to retrieve said transmitted stored sequence of inputs from said second memory and apply said received sequence of inputs to said second display logic to cause said display logic to manipulate said displayed image data having said second arrangement to realize said third arrangement on said second display without substantially altering said first arrangement.

41. The apparatus of Claim 40, wherein said second store logic is further operative to determine at least one difference between said first diagnostic medical imaging system and said second diagnostic medical imaging system; and
report to said user if at least one input of said transmitted stored sequence of inputs depends upon said difference.
42. The apparatus of Claim 40, wherein said second store logic is further operative to adjust at least one input of said transmitted stored sequence of inputs to compensate for differences between said first diagnostic medical imaging system and said second diagnostic medical imaging system.

43. The apparatus of Claim 38, wherein said first store logic is operative to allow said stored sequence of inputs to be altered, wherein said first store logic is further operative to apply said altered stored sequence of inputs to said first display logic to cause said first display logic to re-manipulate said displayed image to a fourth arrangement on said first display based on said altered stored sequence of inputs, without substantially altering said first arrangement.
44. The apparatus of Claim 38, wherein said first diagnostic medical imaging system comprises a diagnostic medical ultrasound system.
45. The apparatus of Claim 38, wherein said first diagnostic medical imaging system comprises a plurality of display parameters, each of said display parameters comprising a value, wherein said second arrangement is further based on said value of each of said display parameters, at least one said sequence of inputs being operative to alter said value of at least one display parameter to realize said third arrangement, said first store logic being further operative to store at least said altered value, wherein said stored altered value is capable of being applied, in conjunction with said stored sequence of inputs, to said first display logic to cause said first display logic to manipulate said displayed image data having said second arrangement to realize said third arrangement on said first display without substantially altering said first arrangement.
46. The apparatus of Claim 38, wherein said first store logic is further operative to store identification of said image data in said first memory with said received sequence of inputs.
47. An apparatus for managing image data acquired with a first diagnostic medical imaging system, said first diagnostic medical imaging system comprising a first display and a first plurality of display parameters, each of said display parameters further comprising a value, said value of each of said first plurality of display parameters operative to control an arrangement of said image data as displayed on said display, said apparatus comprising:

first display logic coupled with said first display and operative to display said image data on said first display, said displayed image data comprising a sequence of three dimensional volumes, each three dimensional volume of said sequence of three dimensional volumes having been incrementally acquired over a period of time, said displayed image data further having a first arrangement displayed on said display based on said image data and at least one of said values of said first plurality of display parameters;

first input logic coupled with said first display and operative to receive input, said input operative to alter said value of at least one of said first plurality of display parameters, whereby said first display logic is operative to manipulate said displayed image data from said first arrangement displayed on said display to a second arrangement displayed on said display based on said altered value, without substantially altering said image data; and

first store logic coupled with said first input logic and said first display logic and operative to store at least said altered value in a first memory coupled with said first store logic, wherein said stored altered value is capable of being automatically applied to said displayed image data having said first arrangement to realize said second arrangement on said display without substantially altering said image data.

48. The apparatus of Claim 47, wherein:

said first display logic is further operative to load said image data, said loaded image data having said first arrangement;

said first input logic is further operative to receive direction from a user to apply said recorded altered value; and

said first store logic is further operative to retrieve said stored altered value from said first memory in response to said direction and apply said recorded altered value without further input from said user to cause said first display logic to manipulate said loaded image data from said first arrangement to said second arrangement displayed on said display, without substantially altering said image data.

49. The apparatus of Claim 47, wherein said apparatus further comprises:
- first communication logic coupled with said first store logic and operative to transmit said stored altered value to a second diagnostic medical imaging system via a network coupled between said first and second diagnostic medical imaging systems, said second diagnostic medical imaging system comprising a second display, second display logic with said second display, second input logic coupled with said second display logic, second store logic coupled with said second display logic and said second input logic, and second communications logic coupled with said second store logic, said second communications logic operative to receive said transmitted stored altered value and store said transmitted stored altered value in a second memory coupled with said second store logic, and wherein:
- said second display logic is further operative to load said image data, said loaded image data having said first arrangement;
- said second input logic is further operative to receive direction from a user to apply said transmitted stored altered value; and
- said second store logic is further operative to retrieve said transmitted stored altered value from said second memory and apply said received altered value to said second display logic to cause said second display logic to manipulate said displayed image data having said first arrangement to realize said second arrangement on said second display without substantially altering said image data.
50. The apparatus of Claim 49, wherein said second store logic is further operative to determine at least one difference between said first diagnostic medical imaging system and said second diagnostic medical imaging system; and
- report to said user if at least one value of said transmitted stored altered value depends upon said difference.
51. The apparatus of Claim 49, wherein said second store logic is further operative to adjust at least one value of said transmitted stored altered value to compensate for

differences between said first diagnostic medical imaging system and said second diagnostic medical imaging system.

52. The apparatus of Claim 47, wherein said first store logic is operative to allow said stored altered value to be modified, wherein said first store logic is further operative to apply said modified stored altered value to said first display logic to cause said first display logic to re-manipulate said displayed image to a third arrangement on said first display based on said modified stored altered value, without substantially altering said image data.
53. The apparatus of Claim 47, wherein said first diagnostic medical imaging system comprises a diagnostic medical ultrasound system.
54. The apparatus of Claim 47, wherein said first diagnostic medical imaging system comprises a review workstation.
55. The apparatus of Claim 47, wherein said first store logic is further operative to store identification of said image data in said first memory with said at least said altered value.
56. In a first diagnostic medical imaging system having a first display for displaying image data controllable by a first plurality of display parameters, a apparatus for managing said image data, said image data comprising a sequence of three dimensional volumes, each of said three dimensional volumes having been incrementally acquired over a period of time, said method comprising:
 - means for allowing a user to manipulate at least one of said first plurality of display parameters to define a viewing configuration of a portion of said image data on said first display without substantially altering said image data; and
 - means for storing said user definition independent of said image data, without substantially altering said image data, whereby said stored user definition is capable of being retrieved to recreate said viewing configuration of said portion of said image data.

57. The apparatus of Claim 56, wherein said means for allowing further comprises means for receiving a sequence of inputs, said sequence of inputs operative to manipulate said first plurality of display parameters, said user definition comprising said sequence of inputs.
58. The apparatus of claim 56, wherein said stored user definition is capable of being communicated to a second diagnostic medical imaging system, said second diagnostic medical imaging system having a second display controllable by a second plurality of display parameters, said communicated stored user definition being operative to manipulate at least one of said second plurality of display parameters to recreate said viewing configuration of said image data on said second display.
59. The apparatus of Claim 56, wherein said means for storing further comprises means for identifying said image data and means for storing said identification with said user definition.